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The Role of External Mechanisms and Transformational Leadership in Information Security Policy Effectiveness: A Managerial Perspective of Financial Industry in Vietnam

Research-in-progress

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Abstract

Information security policy (ISP) violations are one of the biggest concerns for all organisations around the world, resulting in billions of direct and indirect losses; especially in the financial industry. Senior managers and their leadership style play a crucial role in enforcing the employees' compliance with ISP. However, previous research has been mostly conducted at individual level and has not fully investigated the effectiveness of ISP from managerial and organisational perspectives. Drawing on neo-institutional theory and transformational leadership model, this research investigates the impact of external mechanisms and transformational leadership on the effectiveness of ISP. The proposed research model will be tested using field survey data from professional managers in the financial sector. Partial least square structural equation modelling (PLS-SEM) will be used to test the proposed hypotheses. The potential contribution of this study is to enhance our knowledge from a theoretical and practical perspective of the role of external and transformational leadership in the effectiveness of ISP.

Keywords: Information security policy (ISP), ISP effectiveness, ISP enforcement, neo-institutional theory, transformational leadership.

1 Introduction

Information security policy (ISP) violations are one of the biggest concerns for all organisations around the world resulting in billions of direct and indirect losses (Jang-Jaccard and Nepal 2014; Teh et al. 2015). Previous research argues that regardless of increasing investment in technological aspects of information security (IS), organisations were still facing a growing loss because of the negligence of employees (Chang and Lin 2007; Chen et al. 2012). Teh et al. (2015) reported that 94 per cent of banks were influenced by employee-related violations, and more than 50 per cent of information security (IS) violations arose from the employee's non-compliance. Therefore, it creates a requirement for organisations to focus on the management mechanisms of IS, such as policies and enforcement (Chang and Lin 2007; Chen et al. 2012; Teh et al. 2015). Due to the intensive amount of information in the financial industry, the development of ISP is crucial for every financial firm (Teh et al. 2015; Von Solms 2001).

Previous studies stated that senior management commitment contributed to ensuring the employees' compliance with ISP by raising their awareness, promoting cooperation among them, and having effective enforcement policies (Barton et al. 2016; Choi 2016; Daud et al. 2018; Veiga and Eloff 2007). Most ISP issues come from the low-level commitment of all senior management level (Ahmad et al. 2014; Barton et al. 2016; Chang and Ho 2006; Von Solms 2001). Despite the importance of senior management roles in ISP effectiveness, there is inadequate attention on determining factors motivating senior management involvement in this process. As a result, there is a need to investigate the effect of external factors on senior management involvement in ISP and promoting ISP effectiveness. Drawing on neo-institutional theory, Liang et al. (2007) and Barton et al. (2016) argued the importance of neo-institutional factors on senior management's belief and participation in organisational activities.

On the other hand, management can nourish the security culture inside organisations by controlling information security governance and maintaining ISP enforcement (Barton et al. 2016; Knapp et al. 2006; Knapp et al. 2007; Veiga and Eloff 2007). With sufficient ISP enforcement, managers can optimise the information preservation process and improve the effectiveness of the ISP (Knapp et al. 2006; Knapp et al. 2007). Previous studies indicated that transformational leadership could work as a mechanism to promote organisational performance (Dvir et al. 2002; Kark et al. 2003; Price and Weiss 2013). However, little attention has been given to the role of transformational leadership in improving ISP enforcement and effectiveness. Choi (2016) asserted that transformational leadership with effective persuasion, motivation and inspiration from the senior managers significantly impacts both their subordinates and other employees to form a positive security culture in the organisation.

Based on these arguments, this research seeks empirical evidence to answer two research questions:

- Which institutional factors have a significant influence on the effectiveness of ISP in organisations?
- What is the impact of transformational leadership on the effectiveness of ISP in organisations?

The result can shed light on the critical institutional factors and the crucial transformational leadership elements that significantly affect the effectiveness of the ISP.

2 Theoretical Background

2.1 IS management

With efficient IS strategies aligned with the business strategies, organisations can protect and preserve the company data from internal and external threats, maintain the value of the organisation's information and increase the economic wealth (Jang-Jaccard and Nepal 2014; McFadzean et al. 2006; Teh et al. 2015). However, the investment in technological features of IS is inadequate, and a comprehensive IS strategy in both technological and managerial aspects needs to be developed (Barton et al. 2016; Chang and Lin 2007; Chen et al. 2012; Teh et al. 2015). Various factors of general deterrence theory such as disincentives, policies, training and awareness indicate a significant impact on the effectiveness of IS (Chen et al. 2012; Knapp et al. 2007). According to Knapp et al. (2007), user training, security culture, ISP relevance, and ISP enforcement play an important role in ISP effectiveness and top management support works as mediators to improve those factors. ISP enforcement refers to the punishment or sanction to the violations of ISP. With sufficient ISP enforcement, managers can optimise the information preservation process and improve the effectiveness of the ISP (Knapp et al. 2006; Knapp et al. 2007). Empirical research in IS field argued that neo-institutional theory could work as mechanisms to motivate management involvement in mediator role to boost the effectiveness of ISP.

Likewise, transformational leadership was concluded to be a technique to support ISP enforcement to promote the security culture and reinforce the effectiveness of ISP (Barton et al. 2016; Choi 2016; Knapp et al. 2006).

2.2 Neo-institutional Theory

Neo-institutional theory refers to three institutional isomorphic namely coercive, normative, and mimetic isomorphisms described as external mechanisms that had influences on the rationality in the organisation (DiMaggio and Powell 1983; Hu et al. 2007; Meyer and Rowan 1977). In other words, firms are affected by elements in the environments and tend to modify themselves according to those elements to be survived or succeed (Hu et al. 2007; Meyer and Rowan 1977). Coercive isomorphism is both formal and informal pressure from other organisations such as the regulation from the local government or other professional organisations and networks in the industry (DiMaggio and Powell 1983). Mimetic isomorphism refers to “a powerful force that encourages imitation” (DiMaggio and Powell 1983, p. 151). It happens when firms do not have enough knowledge or capability; they tend to imitate the action of other organisation considered to be successful in the market (Guler et al. 2002). Normative isomorphism was defined as “professionalisation” that a group of members collectively form a cognitive base (DiMaggio and Powell 1983). Additionally, it is the standards and norms created by different groups to force others to follow. Formal education and professional training can work as a normative isomorphism to form an organisational norm for all employees and managers that shape the organisational behaviour.

Although both external and internal pressures influence ISP, the external influences were concluded to be a critical factor that affects the process of assimilating IS and security culture in organisations (Hsu et al. 2012; Hu et al. 2007). The coercive and normative mechanisms played a critical role in motivating senior managers to participate in IS protocols and practices (Hu et al. 2007). In a recent study by Barton et al. (2016), mimetic influences were concluded to significantly impact senior management belief and participation in information system security. To investigate the relationship of external influences on the effectiveness of ISP, it is requisite to adapt the theory of neo-institutional factors in motivating senior management to involve in promoting the ISP effectiveness.

2.3 Transformational Leadership Model

Leadership traits and effectiveness have gathered lots of attention from academic research around the world. In 1978, Burns (1978) had developed the concept of transactional leadership and transformational leadership. While transactional leader gain collaboration from employees by creating exchanges between leaders and followers and monitoring those exchanges by carrot and stick theory, transformational leaders achieve the cooperation of employees by providing persuasion, motivation and inspiration to develop followers' self-interests (Bass and Avolio 1990; Bass 1985; Burns 1978; Judge et al. 2000). Transformational leaders promote followers to move beyond their immediate self-interests by raising their awareness of stakeholders' interests and well-being as well as organisational and social wealth; pushing them to move from “concerns for existence to concerns for achievement, growth and development” (Bass and Avolio 1990, p. 22; Bass 1985).

According to Bass (1985)'s theory, transformational leadership contains four elements: inspirational motivation, idealised influence, individualised consideration, and intellectual stimulation. Inspirational motivation refers to the behaviours of articulating an attractive vision, using emotional arguments and demonstrating optimism and enthusiasm to followers. Whereas, idealised influence refers to be a role model to gain trust, respect and confidence from followers. Individualised consideration refers to the concentration and attention of leaders on the individual needs of followers. They provide additional support, encouragement, training and coaching facilities to followers to promote the development of followers and raise their confidence to take more responsibility. Intellectual stimulation focuses on followers' creativity by encouraging innovative perspectives on old problems, challenging followers' status quo, raise their awareness of issues and improve problem-solving skills (Bass and Avolio 1990; Judge et al. 2000; Kark et al. 2003).

Previous studies asserted that transformational leadership behaviours were correlated with the effectiveness of leadership and the performance of employee (Lowe et al. 1996) and high employee performance (Dvir et al. 2002; Kark et al. 2003; Price and Weiss 2013). Choi (2016) reported the importance of idealised influence, individualised consideration and inspirational motivation in the ISP enforcement and effectiveness. According to Viator (2001), the six dimensions of transformational leadership from Podsakoff et al. (1990)'s study fit the data more significantly than fewer items model of the previous researcher which include articulating a vision, providing an appropriate model, fostering the acceptance of group goals, high performance expectations, providing individualised support and

intellectual stimulation. Thus, the six dimensions of transformational leadership will be investigated in this study regarding their effects on ISP effectiveness.

3 Research Model and Hypotheses

Drawing on the neo-institutional theory and transformational leadership model, this study proposes the following research model as shown in Figure 1. Neo-institutional and transformational leadership factors are hypothesised as the antecedents of senior management participation in ISP and ISP enforcement, respectively. ISP effectiveness is hypothesised as the consequence of senior management participation in ISP and ISP enforcement.

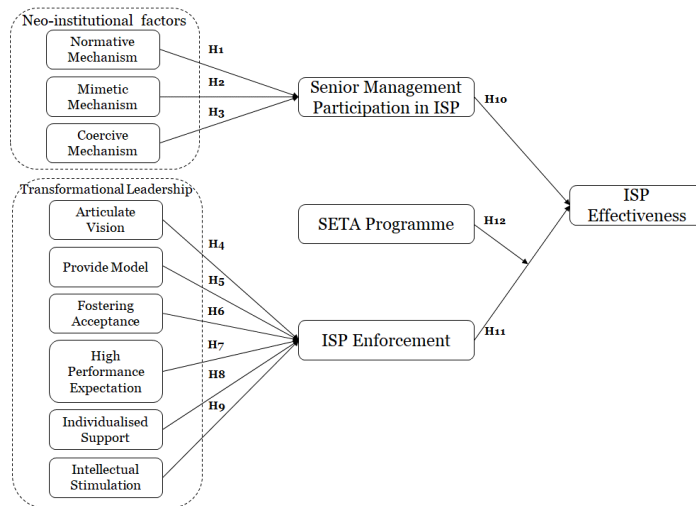


Figure 1: Conceptual model of study

Based on neo-institutional theory, organisations tend to modify their businesses based on the external environment factors to survive and succeed in the market (DiMaggio and Powell 1983; Meyer and Rowan 1977). The empirical evidence support that external factors significantly influence senior management participation (Hsu et al. 2012; Hu et al. 2007). External environment factors such as normative or mimetic mechanisms influence top managers' belief to form a cognitive base then guide their behaviours to adapt those concepts in their organisations (Liang et al. 2007). In the context of IS, top management's participation mostly depends on their belief in the contribution and value of IS instead of the objective reality. For instance, mimetic mechanism indicated that top managers tend to mimic the strategy of successful competitors if they believe in the potential profit for their company while coercive mechanism such as the requirement from regulatory agencies directly enforces top managers to follow and require them to participate (Barton et al. 2016; Liang et al. 2007). Liang et al. (2007) first emphasised the use of neo-institutional factors in information system field that the effects of coercive and mimetic pressures positively impact top management participation in enterprise resources planning adoption while Hu et al. (2007) argued the coercive and normative mechanisms and Barton et al. (2016) asserted mimetic mechanisms played a critical role in motivating senior managers to participate in IS protocols and practices. By extending those arguments, we expect to see a positive relationship between neo-institutional factors and senior management participation in ISP. Thus, we hypothesise:

H1-3: Neo-institutional factors (normative, mimetic and coercive mechanisms) will positively affect the senior management participation in ISP.

Transformational leadership is the mechanism to motivate followers to achieve beyond expectations while still engage in a strong emotional connection. Previous studies discussed the importance of transformational leadership behaviours in the organisational performance and enforcement related to employees' commitment and compliance (Dvir et al. 2002; Kark et al. 2003; Price and Weiss 2013). Transformational leadership directly impact organisational citizenship behaviours which are voluntary commitments of employees to organisational goals, or indirectly through its effects on mediators such as followers' trust and satisfaction to encourage them to take more extra-role behaviours (Podsakoff et al. 1990). Transformational leaders can gain employees' trust and respect through effective individualised support, efficient core transformational leadership behaviours like articulating the organisational vision. Therefore, they would better nurture organisational citizenship behaviours such

as going beyond minimum requirement, willing to take more responsibility and preventing problems from occurring (Podsakoff et al. 1990). In the context of ISP, Choi (2016) indicated that transformational leadership behaviours like idealised influence, individualised consideration and inspirational motivation act as a mechanism to promote ISP effectiveness. Thus, this study expects to find a positive effect of the transformational leadership behaviours on ISP enforcement. Therefore, we hypothesise:

H4-9: Transformational leadership (articulating a vision, providing model, fostering acceptance, high performance expectations, providing individualised support and intellectual stimulation) will positively affect ISP enforcement in organisations.

According to deterrence theory, ISP plays a role of controlling factor in the organisation to improve IS based on employees' "fear of sanctions and unpleasant consequences" (Chen et al. 2012; Knapp et al. 2007, p. 53). Knapp et al. (2007) established the concept of ISP relevance and ISP enforcement. ISP enforcement refers to sanction, punishment or termination when violating ISP and ISP effectiveness refers to the extent that objectives and goals of ISP are successfully achieved (Knapp et al. 2007). To enhance the effectiveness of ISP, organisations should include all desirable goals and possible outcomes in ISP and effectively control it; otherwise, it will be useless without enforcement. The effectiveness of ISP is highly influenced by the top management support role in IS programmes: user training, security culture, ISP relevance and ISP enforcement. Therefore, this study investigates the relationship of ISP enforcement and ISP effectiveness. Therefore, we hypothesise:

H10-11: Higher level of senior management participation and ISP enforcement will lead to a higher level of ISP effectiveness in organisations.

Drawing on the model of general deterrence theory, the effectiveness of security education and training awareness (SETA) programme was concluded to be a control mechanism to reduce misuse behaviour and improve security compliance intention and security culture through increasing perceptions of the certainty and severity of punishment related to violating ISP (Chen et al. 2015; D'Arcy et al. 2009). Organisations with less effective SETA programme may render the influences derived from organisational ISP enforcement; in comparison with organisations with more efficient SETA programme, in terms of promoting ISP effectiveness in which goals of ISP can be successfully achieved. Therefore, we hypothesise:

H12: SETA programme moderates the impact of ISP enforcement on ISP effectiveness.

4 Methodology

All the constructs of this research will be multi-item scales adjusted from established scales of previous studies with minor modification to fit in the context of ISP (Appendix A). A seven-point Likert scale will be used for all item ranging from strongly disagree (1) to strongly agree (7). The online survey will be built on Qualtrics platform provided by AUT University. Due to the unfamiliarity of respondents with English language and the importance of response rate in this managerial research, the online survey will be disseminated in both Vietnamese and English language to motivate the Vietnamese professional managers to participate. This study will collect data from managers who are aware or in charge of the ISP inside their organisations, in the financial sector in Vietnam. The pre-test study has been done through five managers (including chief information officers IT managers) from financial firms to improve the understandability of the questionnaires. Adjustments and modifications have been made based on the experts' comments. Then a pilot study with 30-40 participants was conducted to test for the reliability and validity of the constructs. All items exhibited high loadings (>0.70). The composite reliability (CR) of all constructs was 0.78 or higher, which indicates that the constructs were within acceptable limits and, therefore reliable (Gefen et al. 2011). Constructs had AVE greater than 0.5, which is considered adequate. Reliability of all the indicators was also acceptable (Fornell and Larcker 1981). The main study will be conducted with a target sample size of 200 participants. Human resources (HR) managers from financial firms in Vietnam will be approached through professional communities and social media networks like LinkedIn and will be requested for recruiting the participants for this study. HR managers who agree to disseminate the survey to their organisations' managers will receive the participant information sheet and a survey link to be disseminated among managers. Partial least squares-structural equation modelling (PLS-SEM) has been widely adopted in information systems discipline, because of its capability of exploring multiple relationships between constructs and handling

complex models or the existence of moderator construct (Gefen et al. 2011; Henseler and Fassott 2010). Therefore, PLS-SEM will be used for analysing data of this study.

5 Expected Contribution

This study will provide both theoretical and practical contributions. Drawing on neo-institutional and transformational leadership theories, this research presents an integrated model for evaluating the important factors in relation to ISP effectiveness. This study will extend the IS research, which has been mainly conducted in individual level (e.g., employee's compliance) and has not fully investigated the managerial and organisational perspectives. In terms of practice, the results will provide managers with an overall understanding of critical factors that might impact the ISP of an organisation. The research findings will also support managers in the understanding of the critical external factors and the key transformational leadership factors that may significantly influence ISP effectiveness. Results from this study will also help organisations to evaluate their organisation's ISP from a managerial perspective. Rather than considering the effectiveness of ISP only originated from employees' compliance, it provides an effective strategy for investigating the root cause of ISP issues from different aspects and support top management in creating, implementing and controlling ISP, and ultimately increase the organisation well-being and economical wealth.

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Appendix A:

Construct	Measurement items	Reference
Coercive mechanism	The local government requires our organisation to use ISP	(Liang et al. 2007)
	The industry association requires our organisation to use ISP	
	The local competitive conditions require our organisation to use ISP	
	Our main competitors who have adopted ISP have greatly benefitted	

Mimetic mechanism	Our main competitors who have adopted ISP are favourably perceived by suppliers and customers in the same industry	(Liang et al. 2007)
Normative mechanism	Please indicate the extent of ISP adoption by your firm's suppliers	(Liang et al. 2007)
	Please indicate the extent of ISP adoption by your firm's customers	
	Please indicate the extent to which the government's promotion of ISP influences your organisation to use	
Senior Management Participation in ISP	The senior management of our organisation actively articulates a vision for the organizational use of ISP	(Liang et al. 2007)
	The senior management of our organisation actively formulated a strategy for the organizational use of ISP	
	The senior management of our organisation actively established goals and standards to monitor the use of ISP	
Articulate Vision	I create an interesting picture of the future for ISP practice area	(Podsakoff et al. 1990)
	I have a clear understanding of where we are going in terms of ISP	
	I inspire other employees with my ISP related plans for the future of our organisation	
	I am able to get other employees committed to my ISP related dream of the future of our organisation	
Provide Model	In terms of ISP compliance, I lead by "doing" rather than "telling".	(Podsakoff et al. 1990)
	In terms of ISP compliance, I lead by examples and best practices	
	In terms of ISP compliance, I provide good model for other employees.	
Fostering Acceptance	I foster collaboration between my team and the ISP team.	(Podsakoff et al. 1990)
	I develop team attitude and spirit among employees in order to comply with ISP.	
	I encourage employees to be "team player" in ISP compliance.	
High Performance Expectation	I show employees that I expect a lot from them regarding ISP compliance	(Podsakoff et al. 1990)
	I insist only on the best performance (zero ISP non-compliance)	
	I will not settle for the second best when it comes to ISP compliance	
Individualised Support	I respect my employees' feelings regarding ISP related activities	(Podsakoff et al. 1990)
	I behave in a way that is thoughtful of my employees' personal needs regarding ISP related activities	
Intellectual Simulation	I provide my employees new ways of approaching ISP issues to make them think about possible solutions	(Podsakoff et al. 1990)
	I force my employees to rethink some of their ISP related ideas.	
ISP Enforcement	Employees caught violating ISP are appropriately corrected	(Knapp et al. 2006)
	Information security rules are enforced by sanctioning the employees who break them	
	Repeat security offenders are appropriately disciplined	
	Termination is a consideration for employees who repeatedly break security rules	
SETA Programme	In my organization, employees are briefed on the consequences of modifying the organisation's data in an unauthorized way.	(Chen et al. 2015)
	My organization educates employees on their information security responsibilities.	
	In my organization, employees are briefed on the consequences of accessing information systems that they are not authorized to use.	
ISP Effectiveness	The ISP achieves most of its goals.	(Hsu et al. 2015)
	The ISP accomplishes its most important objectives.	
	Information in our organisation is sufficiently protected.	
	Overall, the ISP is effective in our organisation.	
	The ISP has kept our organisation's security losses to a minimum.	

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